

APS Policy on Energized Electrical (Hot) Work, including Test & Measurement of Energized Circuits

Electrical hot work is defined as “Working on or near exposed conducting parts that are or might become energized at 50V or more.” Examples of tasks considered electrical hot work include: pulling and/or terminating cables inside exposed energized distribution panels; pulling/replacing fuses on exposed energized circuits; replacing circuit breakers on exposed energized panels.

Working hot must be considered a last resort after all other opportunities for establishing an electrically safe work condition have been exhausted. All hot work performed at the APS must be justified and must be performed in compliance with the requirements of NFPA-70E (2004).

At ANL, and hence at the APS, all hot work requires formal review and approval, through an “ANL Electrical Hot Work Permit”.

Related to hot work is the task of performing test & measurements on energized circuits at 50V or more. Where it can be justified, NFPA-70E permits such tasks by authorized qualified individuals without a formal hot work permit. Qualified persons are those persons deemed by Management to be sufficiently knowledgeable and competent to perform the specific task safely.

At the APS, all test & measurement activities above 50V require formal review and authorization, through an “APS Energized Electrical Test & Measurement Authorization” form (referred to in this document as the Test & Measurement Authorization form).

Specific APS local interpretations and requirements for hot work approvals are described in this document.

A. General Policy and Guidelines

1. All energized electrical hot work above 50V requires formal review and approval via a completed “ANL Electrical Hot Work Permit.”
2. All test & measurement activities above 50V other than for LOTO require formal review and authorization via a completed “APS Energized Electrical Test & Measurement Authorization” form. *Cautionary note: Voltage verification for LOTO purposes must be performed in compliance with NFPA-70E. Workers must be qualified and authorized.*
3. All Test & Measurement Authorization forms must identify the specific named person(s) authorized to perform the specified work. All authorized persons must report to the same line manager (group leader or CAT Director). Persons appointed as safety watches may be from another group.
4. Test & Measurement Authorization forms must be posted at the job site while the work is being performed, whether it is generalized, task specific, annual, or for one-time use.
5. Test & Measurement Authorization forms can be sought to cover three scenarios:
 - a. *Task-specific one-time-use Test & Measurement Authorization*
 - i. Lists a specific activity and specific equipment.
 - ii. Can be used for any level of shock and/or arc-flash hazard.

- iii. Valid only for one instance of the hot work. A new permit must be obtained for any subsequent instance of the same work.
- iv. With additional approval, may be converted to a task-specific extended-duration hot work authorization.

b. Task-specific extended-duration Test & Measurement Authorization

- i. Lists a specific activity and specific equipment.
- ii. Can be used for any level of shock and/or arc-flash hazard.
- iii. Valid for an extended duration, up to one calendar year.
- iv. Approval of Group Leader or CAT Director (or designee) and a pre-job briefing are required for every instance of work performed. A new permit must be sought if the pre-job briefing reveals changes to the safety envelope.
- v. All instances of work performed under the permit shall be documented and auditable.

c. Broad-scope extended-duration Test & Measurement Authorization

- i. Lists the type of activity, the type of equipment, the geographical area, and technical group.
- ii. Cannot be used for shock hazards above 240V or arc-flash hazards above Risk Category 1 (use a task-specific authorization instead).
- iii. Valid for an extended duration, up to one calendar year.
- iv. Group Leader responsible for providing an audit trail of any work performed under this permit, such as through a working hot log or a documented job briefing

B. Test & Measurement Authorization Approvals and Responsibilities

All Test & Measurement Authorization forms require a minimum of four separate signatures:

- Group Leader or CAT Director (or designee) as appropriate.
- An APS ESH Coordinator.
- Two APS Electrical Safety Committee members, at least one of which must be outside the group/CAT requesting authorization.

The Test & Measurement Authorization form includes an electrical hazard analysis of the work to be performed. The hazard analysis shall be performed by a competent electrical engineer that has familiarity with the equipment and circuits to be measured and that has ESH-375 training.

All Test & Measurement Authorizations must name specific workers authorized to perform the work. Individuals shall sign the authorization form to confirm they have read and understand the contents, agree that the work can be performed safely, and will follow the conditions noted on the authorization form.

Division Director Responsibilities *(For CATs: AOD Division Director)*

- Appoints qualified electrical workers
- Approves conversion of task-specific one-time-use Test & Measurement Authorizations to extended-duration Test & Measurement Authorizations.

Group Leader Responsibilities *(For CATs: CAT Director or local authorized designee)*

- Assures that the energized test & measurements can be justified
- Assures that the work can be done safely and that persons listed are authorized and qualified to perform the work.
- Is accountable for ensuring that criteria written into the authorization are followed.

ESH Coordinator Responsibilities

- Assures that the proper safety approval process has been followed.

APS Electrical Safety Committee Member Responsibilities

- Approves and/or performs the hazard analysis.
- Approves and/or defines PPE and safe working practices for the task to be performed.
- Self-certifies that they are qualified to address electrical safety issues with the work for which the authorization is requested.

Authorized Worker Responsibilities

- Participates in pre-job briefing
- Complies with criteria on the Test & Measurement Authorization.
- Understands the safety envelope of work before starting, and stops work if conditions change beyond the original scope or safety envelope.
- Performs work according to established APS safe working practices.